risk factors, and details of the main groups of antihypertensive drugs. An energy chart was included, as were tables detailing the cholesterol and potassium contents of selected foods and ideal body weights. Finally, there was a section for recording blood pressure values and drug prescriptions. Patients were told only that this was a booklet about high blood pressure and were asked to bring it with them when they visited the clinic or their family doctor so that their blood pressure and drug treatment could be recorded. The clinic doctors were unaware of the group to which each patient had been allocated as the booklet was completed by a nurse during the three months of the study.

After three months all 100 patients were asked to complete a questionnaire containing 40 questions. These included six direct questions about the patients' blood pressure, weight, and drug treatment. The remaining 34 questions allowed the patients to answer "true," "false," or "don't know" to statements about the nature and treatment of hypertension and the dietary information contained in the booklet. The questionnaire was completed immediately before the patient left the hospital to prevent patients discussing it in the waiting area.

Ninety-three patients completed the study, of whom 46 had received the booklet. There was no significant difference between the groups in the duration of attendance at the clinic or age (mean age 51.2 years). The mean number of correct answers given by patients using the booklet was 23.9 ± 0.8 and 18.1 ± 0.8 by the controls ($p < 0.001$), the maximum score possible being 40.

The table shows results for individual questions. More patients from the booklet group could name their drugs and last recorded blood pressure.

Number of correct answers to questions concerning patients' own state and general questions about hypertension

	Control group	Booklet group	Difference (p)
Knew ideal weight	26	29	NS
Knew actual weight	38	43	NS
Knew blood pressure at last visit	6	18	< 0.01
Blood pressure increased or decreased since last visit	13	11	NS
Named type of drug	9	11	NS
Named actual drug	16	30	< 0.01
Most people with high blood pressure:			
Have headaches	8	26	< 0.001
Feel breathless	9	26	< 0.001
Feel perfectly well	17	28	< 0.025
Drug treatment for high blood pressure is needed only when you:			
Feel unwell	33	38	NS
Usually last for life	25	35	< 0.025
Can be stopped when blood pressure is controlled	20	32	< 0.01
People with high blood pressure should:			
Avoid regular exercise	36	42	NS
Stop smoking	44	44	NS
Add less salt to their food	38	40	NS
Take high-energy foods	24	37	< 0.01
High blood pressure increases the risk of stroke	45	45	NS
High blood pressure increases the risk of kidney trouble	19	34	< 0.01
People taking diuretic drugs:			
Lose potassium	1	7	< 0.025
Lose more salt through their kidneys	4	10	NS
Beta-blockers slow the heart rate	4	9	NS
Vasodilators are usually used alone	0	1	NS
It would be advisable to consult your doctor if your blood pressure is:			
160/95 mm Hg	13	16	NS
140/80 mm Hg	12	22	< 0.05
190/115 mm Hg	21	29	NS
The following foods are rich in potassium:			
Banana	5	7	NS
Bread	3	4	NS
Potato	8	15	< 0.01

They were more often aware of the asymptomatic nature of the condition, the need for life-long treatment, the association between hypertension and kidney trouble, and the cholesterol and energy values of selected foods. There was no significant difference, however, between the groups in knowledge of their weight, whether their blood pressure had increased or decreased since their last visit, and the pharmacological classification of their drugs. Both groups were equally aware of the relations of exercise, smoking, salt, and stroke to hypertension, but few understood the importance of various values of blood pressure and virtually none understood the side effects of drugs.

Comment

Since this study was single-blind and no explanation of the text was given to the patients the increased knowledge of the study group about some important aspects of hypertension may be attributed directly to the booklet. Some of the information provided, however, particularly that relating to drugs, was not understood. This emphasises the need to keep the text of such booklets simple, in keeping with

recent recommendations,² and patients should be encouraged to discuss their reading with their doctor.

The study was not designed to test for differences in compliance or the outcome of treatment, but analysis shows that there was no appreciable difference in blood pressure or weight between the groups. While educating patients does not in itself improve compliance, patients should have at least some basic understanding of their treatment.³ Finally, the booklet also serves as an effective means of communication between the clinic and family doctor and this must ultimately contribute to better patient care.⁴

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Biphasic sulphinpyrazone-warfarin interaction

Previous reports have provided evidence that sulphinpyrazone can potentiate the anticoagulant effect of warfarin.^{1,2} We recently observed a woman in whom the prolonged addition of sulphinpyrazone caused a biphasic interaction with warfarin—that is, potentiation followed by antagonism.

Case report

A 37-year-old woman with recurrent venous thrombosis and pulmonary embolism was treated with about 15 mg warfarin daily for one month. Notwithstanding this her prothrombin time (Thrombotest, Nyegaard and Co, Oslo) was near to but not within the therapeutic range. Owing to the recurrence of venous thrombosis we added to this regimen 200 mg sulphinpyrazone three times a day (10 mg/kg body weight/day). This drug was chosen for its reported efficacy in controlling the recurrence of venous thrombosis.³ As expected, the dose of warfarin required fell rapidly after sulphinpyrazone was started and then remained between 7.5 and 10 mg/day for about 15 days (figure). Thereafter the warfarin requirement began to rise progressively until 30 mg/day was not enough to keep the result of a Thrombotest within the therapeutic range. An increase in sulphinpyrazone dosage (200 mg four times daily) resulted in only a transient reduction in Thrombotest values. At this point sulphinpyrazone was stopped: the warfarin requirement fell rapidly to 5 mg/day and after a few days had returned to the values seen before the addition of sulphinpyrazone. No drugs other than sulphinpyrazone or warfarin were administered during the observation period. There was no reason to doubt the patient's compliance with either medication. Appreciable changes in diet were carefully avoided.

Comment

Displacement of a drug from its binding protein allows the drug to act but also facilitates its metabolism or excretion.⁴ Both phenylbutazone⁴ and sulphinpyrazone,⁵ which are chemically related, can displace coumarins from their albumin binding sites and initially induce a fall in the dosage of warfarin required. When phenylbutazone is administered long term it induces enhanced hepatic metabolism of warfarin and thus a biphasic effect is seen during its administration.⁴ Even though plasma concentrations of warfarin were not measured, we believe that in our case this same biphasic interaction occurred

Warfarin requirement (shaded area) and results of Thrombotest (●—●) before, during, and after treatment with sulphinpyrazone.

between sulphinpyrazone and warfarin. An alternative explanation might be that the potentiating effect of sulphinpyrazone disappeared because of a self-induction of its own metabolism. This was not the case, however, in our patient because the dosage of warfarin required after prolonged administration of sulphinpyrazone was far above the pretreatment dosage and returned to that value only when sulphinpyrazone was stopped.

The problems of this drug interaction are of considerable clinical interest because of the increasing use of sulphinpyrazone in patients with various cardiovascular diseases.

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Acute ulceration of ileal stoma due to *Campylobacter fetus* subspecies *jejuni*

Campylobacter fetus subspecies *jejuni* causes acute diarrhoea, with or without fever, and occasionally dehydration. We describe a patient, previously operated on for Crohn's disease, with severe watery excretion from an ileal stoma and pronounced acute ulceration of the stoma due to *Campylobacter jejuni*.

Case report

A 45-year-old man underwent proctocolectomy in 1976 for Crohn's disease and remained symptom free for three years. Three days after eating chicken he became ill with fever and severe watery diarrhoea from his stoma (4-5 l daily) and lost 4 kg. On admission four days later he appeared ill, with a temperature of 37.4°C and signs of mild dehydration. The rather large stoma was dark red, oedematous, and with large serpiginous ulcers near the tip (figure). Biopsy specimens showed acute inflammatory changes of the

Acute ulceration of ileal stoma due to *Campylobacter fetus* subspecies *jejuni*.

mucosa and oedema. No granulomas or giant cells were observed. *Campylobacter jejuni* was repeatedly isolated from the stoma efflux. With rehydration the patient recovered in seven days and was discharged when the stomal efflux had returned to normal. Antibiotics were not prescribed during the admission. Cultures for *Campylobacter* became negative after three weeks. The stoma healed very slowly; four weeks after discharge ulcers had disappeared but residual oedema was still present. One year later he had remained symptom free.

Comment

Little information is available on the mucosal alterations of the ileum after campylobacter infections, and most studies have dealt with changes in the colon. Loss of vascular pattern, granularity, friability, and mucosal haemorrhages are seen,¹⁻³ and occasionally macroscopic ulcers have been reported.⁴ Our patient showed severe mucosal abnormalities with definite ulceration around the tip of the stoma. The acute ileitis associated with sudden onset of diarrhoea and fever made an acute relapse of Crohn's disease unlikely. Our study confirms, however, that when acute enteric symptoms occur in patients with inflammatory bowel disease campylobacters should be sought.⁵

In our patient the clinical symptoms disappeared quickly, but campylobacters in the stomal efflux and the abnormalities of the mucosa remained for some weeks. No antibiotics were given; in retrospect, however, we think that the striking ulcerative lesions would probably have healed faster had *Campylobacter jejuni* been eradicated sooner.

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